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ABSTRACT

A study was conducted to identify the environmental conditions and relationships between external and institutional conditions that have a significant effect upon student transfer activity. A sample of 78 colleges in 15 states were selected from institutions participating in a national transfer project; 42% were located in Texas or California. The study examined institutional characteristics, funding, enrollment, and demographic data; and external factors including state articulation and transfer policies; economic conditions; and proximity of senior institutions to the community colleges. Student transfer activity was measured in terms of credit rate (i.e., the percentage of first-time freshmen completing 12 or more credits during a 4-year period) and transfer rate (i.e., the percentage of first-time students with 12 or more credits transferring to a senior institution with a 4-year period). Study findings included the following: (1) factors associated with high credit rates were high unemployment, low community income, high percentages of full-time faculty, high tuition, low enrollments and high percentages of younger and full-time students; (2) high transfer rates were correlated with high community income, high percentages of full-time faculty, low per student expenditures, high percentages of younger and white students, and high percentages of students with 12 or more credits; and (3) formalized statewide articulation mandates had a moderate positive effect on transfer rates, while the close proximity of a senior institution had a moderate negative effect. (JSP)

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# External and Institutional Factors Affecting Community College Student-Transfer Activity

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## Introduction

National and state studies on students transferring from two- to four-year colleges reveal there are vast differences in institutional student-transfer rates among public community colleges (Banks, 1990; Berman, et al., 1989, 1990; Illinois Community College Board, 1979; Maryland State Board for Community Colleges, 1989; McIntyre, 1991). Few studies, however, have examined factors influencing institutional student-transfer rate differences, and those that have were conducted in California (Alkin & Hendrix, 1967; McIntyre, 1984, 1987, 1991). Therefore, the scope of knowledge about broader issues such as formalized articulation/transfer agreements and tuition, believed to affect community college student movement into baccalaureate institutions, is limited.

## Background Information and Purpose of the Study

Studies linking environmental (state/local and institutional) effects with public community college students transferring to senior institutions suggest there are a variety of state/local and institutional conditions influencing this activity. Alkin and Hendrix (1967) evaluating 15 California community colleges found 85% of the variance in institutional student transfer rates could be attributed to community family income, employment levels (e.g., blue- versus white-collar workers), educational attainment levels, and population of the college's district. In the McIntyre studies (1984, 1987, 1991) regression analyses suggested that a number of local and institutional conditions influenced student transfer activity. The analyses showed higher California senior-institution admission requirements, active military draft, and greater unemployment periods, as well as the distances of senior institutions from community college all had significant negative effects on the transfer rates of California community colleges, while younger students, full-time enrollment status, students being white, and transfer centers (a program designed facilitate student transfer activity) had significant positive effects.

The studies also suggested, in some cases, there were interplays among environmental forces which could be related to colleges with high transfer rates. For example, McIntyre (1991) found that colleges with the highest student-transfer rates enrolled more young full-time students and fewer full-time minority students, were located in suburban areas, and operated transfer centers (student service programs designed to facilitate student transfer activity). Another interaction between family income and community socioeconomic status was also found to influence the college's student-transfer rates (Alkin & Hendrix, 1967).

Together, these studies reveal that college student-transfer activity is, in part, influenced by environmental conditions. As stated earlier, the past research does not explain the full scope of influences on transfer activity. More importantly, the past research does not

consider institutional transfer activity to be a process within the college. That is, students must, first demonstrate their commitment to transfer by credit attainment and second by actually enrolling in a senior institution.

This paper examines selected environmental factors as they affect institutional student credit attainment and subsequent student transfer to senior institutions. The assessment framework used in this study considers that environmental factors can be viewed from two perspectives: conditions external to the institution (i.e., community economics and so forth) and conditions within the institution (e.g., resources, expenditures, student demographics). The research questions guiding this study are:

1. What environmental conditions have a significant effect on community college student-transfer activity?

2. What are the interrelationships between the external and institutional conditions affecting community college student-transfer activity?

## Methodology

### The Sample

The colleges assessed in this study were drawn from the sample of participating community colleges in the 1990 Transfer Assembly conducted by the Center for the Study of Community Colleges (CSCC). Since 1989, the CSCC has been collecting and evaluating student credit completion and transfer data from private and public colleges. Data gathered for the 1990 Transfer Assembly were based on the Fall 1985 first-time freshman cohort of 112 nationwide community colleges.

From the Transfer Assembly sample, 80 public community colleges were selected for this study. Of the 80 colleges targeted for this study, two were eliminated from the final analysis because of lack of data on student characteristics. The final sample of 78 colleges represented 15 states across the United States with 42% of the colleges located in either California (N = 17) or Texas (N = 16).

### The Variables

The two dependent variables used in this study were:

> Credit rate - the percentage of first-time freshmen students completing 12 or more credits during a four year period (Cohen, 1990).
>
> Transfer rate - the percentage of first-time freshmen students with 12 or more credits transferring to a senior institution during a four year period (Cohen, 1990).

The independent variables represented conditions external to the college and conditions found within the institution. Institutional conditions were further categorized as resource

and expenditure factors and student enrollment and demographics. The variables, their data sources, and their codes are described.

Conditions external to the college examined were:

1. State articulation and transfer practices and policies as described in Kintzer's (1989) taxonomy of articulation and transfer documents. The coding used for the state documents was: (1) states having detailed agreements on vocational technical course and credit transfer; (2) formal agreements or informal arrangements are negotiated between institutions or segments and are not binding; (3) not legislatively mandated and articulation and transfer is less formal and prescriptive; (4) legally based, where transfer is authorized in the state constitution or in legislation, and where general education requirements are presented in detail.

2. Economic conditions: percentage of city or county unemployment and census tract or county median household income (Alkin & Hendrix, 1967; McIntyre, 1984, 1987). Information about the variables was obtained through several sources. Civilian unemployment percentages were derived from 1985 census information (Bureau of the Census, 1988). City unemployment figures were used except in cases where colleges were not within or close to a city with reported unemployment; then, a county unemployment figure was used. Unemployment figures were represented as percentages in the regression equations. Median household income was gathered from 1980 Census Reports (Bureau of the Census, 1983, 1988). Income data for each college area were based on averaging income levels from six census tracts surrounding the college. If an area was not "tracted," either city or county income level was used. Income figures were coded 1 through 10 by increments of $2000 (e.g., $5000-$7000 = 1).

3. Proximity of senior institutions to the colleges: the numbers of public senior institutions and private senior institutions within a 30-mile radius of the community college (Anderson, Bowman & Tinto, 1972; Richardson & Bender, 1986; McIntyre, 1984). Proximities of public and private senior institutions were considered as separate variables. The information for each group of senior institutions was obtained from a brief college survey sent to institutional researchers of the 80 colleges. To meet specifications of normality, the numbers of public senior institutions were coded as 0 = 0; 1 to 4 = 1; 5 or more = 2 and the private senior institutions were 0 = 0; 1 to 5 = 1; 6 to 10 = 2; 11 or more = 3.

Institutional conditions related to resources and expenditures examined were:

1. Percentage of full-time faculty (Cohen, et al., 1985; Rendon, et al., 1988): percentages of full-time faculty were derived from the *American Association of Community and Junior College's Statistical Directory* (1986, 1988).

2. Faculty advising: whether or not faculty advising was mandatory (Cohen, et al., 1985; Rendon et al., 1988). Information was obtained from a brief college survey. The categories were coded no = 0 and yes =1.

3. College tuition: annual resident tuition, excluding fees (Cohen, 1983; Gilmore, 1990). Tuition information was taken from the *Peterson's Guide to Two-Year Colleges* (Peterson Guides, 1987, 1988) and was coded 1 to 5 in increments of $199.

4. Institutional expenditures: expenditures per credit FTE were the sum of five categories, including instruction, academic support, student services, institutional support, and operation and maintenance of the facilities (McIntyre, 1984, 1987). Expenditure information was obtained from the 1985 HEGIS reports (HEGIS, 1985) and was coded as a continuous variable.

Institutional conditions related to student enrollment and demographics were:

Institutional student demographics: size of institution by credit enrollment, percentage of full-time students, percentage of students under 25 years of age, percentage of white students (all were individual variables) (Minicucci, et al., 1989; McIntyre, 1984,1987). Credit enrollments were obtained from the 1986 IPEDS reports (Chronicle of Higher Education, 1988) and were coded 1 to 9 in increments of 999 (e.g., 001 to 999 = 1). The percentages of full-time enrollments were an average of Fall 1985 and 1986 enrollments as reported in the *American Association of Community and Junior College's Statistical Directory* (AACJC, 1986,1988). The percentages of students under 25 years of age were obtained from the 1989 HEGIS reports (U.S. Department of Education). The percentages of white students were obtained from the 1986 IPEDS reports (U.S. Department of Education in CHE, 1988).

Research Design and Analyses

The study was a two part design. Part I involved semi-stepwise regression analyses using credit and transfer rates as the dependent variables. Part II compared the California and Texas colleges by their credit and transfer rates and selected environmental factors.

For Part I the regression analyses of the credit and transfer rates were framed within the context of a "natural" experimental design (Astin 1970, 1991). Based on the literature, it was assumed that certain conditions would be most likely shape others (e.g., local economic conditions may influence full-time student enrollment). The research design in this study accounted for the likelihood of influences by using an input-environment-output (I-E-O) model. Semi-stepwise regression analyses were conducted for each dependent variable (i.e. credit and transfer rates). By employing the I-E-O model, the groups of independent variables were "forward" into the equations by blocks. The entry order of the variable blocks was: external environmental conditions as the inputs, institutional resources and expenditures as the environmental variables, and institutional enrollment and student characteristics as the intermediary outcome variables.

Each of the equations was tested for assumptions' violations. Corrections of the violations were measured by a series of regression analyses employing either transformations of the variables, removing outliers, or both. It was found that by simply removing outliers, the normality, equality of variance, and linearity of the equations were maintained. Additionally, collinearity effects among the independent variables were observed by Pearson correlations and by variance partitioning (Pedhazur, 1982).

Collinearity was addressed by blocking the variables by their respective groups (i.e., external, institutional resources and expenditures, and institutional student enrollments and demographics) (Pedhazur, 1982).

The regression equations were assessed for significance by their F ratios with a limit of 0.05. The independent variables were measured for their main and interactive effects on the dependent variables by their standardized coefficients and by their contribution to the equation's variance ($R^2$) (Astin, 1991).

For Part II California and Texas colleges were compared by their institutional transfer activity outcomes (i.e., credit and transfer rates), and by selected external and institutional conditions using two-tailed t-tests. Significance levels were designated as 0.05 or below. Probability for the pooled variance estimate was used if the F probability exceeded 0.500, and the separate variance estimate was used with small F probabilities (Norusis, 1987). These comparisons allowed for further examination of conditions such as voluntary versus formalized agreements, unemployment, income, and others believed to be affecting the colleges' transfer activities.

## Findings

Table 1 displays the zero-order correlations among the variables used in the regression analyses. Although the relationship between credit (CE) and transfer (TC) was significant, the level of their association was only moderate ($r = .242$, Table 1). This association level reflects, in part, the multiple purposes of the community college and aspirations of the students. That is, the credit holders could be students in vocational or general education programs who do not plan to transfer. The association, however, could reflect a set of circumstances that prevent students from attaining their transfer goals, such as environmental conditions.

The conditions found to be significantly associated with credit rates were high unemployment, low community income, high percentages of full-time faculty, high tuition, low enrollments, and higher percentages of younger students and full-time students (Table 1). In particular, the strongest associations with credit rates occurred with unemployment ($r = .416$), full-time students ($r = .609$), and younger students ($r = .456$).

For transfer rates the significantly correlated variables were high community income, high percentages of full-time faculty, low FTE expenditures, high percentages of younger and white students, and a high percentage of students with 12 or more credits (Table 1). Of these variables younger students ($r = .476$), high income areas ($r = .340$), and high percentage of white students ($r = .307$) were the most highly correlated with student transfers.

In Tables 2 and 3, standardized coefficients (Betas) were used to explain relations among the independent variables and the variance they shared with the dependent variables. The relationships observed are explained by the entry steps of the independent variables into each equation.

Step 1 in the credit rate (Table 2) model showed that of the five external conditions, only the unemployment variable entered the equation. Unemployment had a strong positive association with credit rate. In the institutional resources and expenditures block, two additional variables, tuition and full-time faculty, were found to be significant predictors of credit rate. These variables, along with unemployment had positive and moderate relationships with credit rate, and explained 31% of the variation found in credit attainment. At Step 4, the variable measuring student age entered the equation, and the amount of explained variance was increased, but the predictive ability of the full-time faculty variable became nonsignificant. This implies that colleges that have many full-time faculty tend to enroll younger students. In Step 5, where the full-time student variable entered the equation, tuition became a nonsignificant predictor, full-time faculty remained nonsignificant and reversed signs, and the association between younger students and credit rates decreased. This suggests that the number of full-time faculty, tuition rate, and student age are more closely associated with the number of full-time students than with credit rates. In the final equation, unemployment contributed to 17% of the variation found in credit rates, institutional resources 14% and student characteristics contribute an additional 19%.

Overall, the standardized coefficients imply that institutions with higher percentages of full-time students enroll younger students, and are found in areas with high unemployment. These conditions may be related to labor market saturation or to the availability of jobs that are not attractive to younger people. Additionally, the results suggest that after controlling for unemployment, tuition is an important influence on full-time student enrollments and the presence of more full-time faculty is associated with greater percentages of younger and full-time students.

As for transfer rates (Table 3), external condition variables, income, formalized mandates, and private senior institutions were significant predictors of the dependent variable (Step 3). The influences of these variables on the transfer rates showed that income was positive and strongly associated, formalized statewide articulation/transfer mandates had a positive and moderate relationship, while the proximity of private senior colleges had a negative and moderate influence. When the institutional expenditures variable entered the equation at Step 4, the relationship between private senior colleges and transfer rates became nonsignificant. At Step 5, institutional expenditures and full-time

faculty variables are in the equation. Both of these variables were moderately associated with transfer rates, but expenditures had a negative value, while faculty were positive in direction. In Step 6, when the student's age variable entered the equation, the strength of expenditures as a predictor dropped in magnitude and the number of full-time faculty became nonsignificant. The relationship between younger students and transfer rates was positive and moderate. The full model showed that external conditions explained 24% of the variation in transfer rates, while institutional resources and expenditures accounted for 14%, and younger students contributed 5%.

These results suggested that higher incomes provide greater resources for students to continue their education, and that formalized articulation/transfer mandates, requiring a full set of articulation services and a core set of transfer courses, between two- and four-year colleges, enhance the transfer activity for students. The negative effects of private colleges on transfer are understandable, because these institutions have the highest tuition and fees of all colleges, thereby posing an access barrier to students who cannot afford to pay. Additionally, the negative relationship between FTE expenditures and transfer rates suggests that the colleges with the highest transfer rates tend to have lower-cost liberal arts programs as oppose to higher-cost programs in the low transfer colleges. And, as with credit rates, the relationship between full-time faculty and younger students indicates that more full-time faculty are associated with greater percentages of younger students.

It should be noted that the number of full-time students did not enter the transfer rate regression equation. Because full-time students have a strong association with students obtaining 12 or more credits ($r = .609$, Table 1), it is believed that the transfer rate formula (using students with 12 or more credits as the base) serves to control for the influence of full-time students.

The means of the entire sample suggested that about 50% of the first-time entrants obtained 12 or more credits during a four-year period (CE), and less than a quarter of the credit attainers transferred to senior institutions (TC) (Table 4). Furthermore, the sample's standard deviations of the variables suggested that wide variations are occurring. This would be expected, since the sample was comprised of community colleges representing 15 states, and regardless of accounting errors, the variations were, in part, representing prevailing statewide conditions (e.g., type of articulation and transfer mandates, unemployment).

Also, in Table 4 the means and standard deviations of the institutional outcomes, and environmental conditions of the California and Texas are displayed. Significant differences between the states were found with students achieving 12 or more credits, full-time students, unemployment, income, FTE expenditures, and tuition. It appeared that a

greater percentage of students obtain 12 or more credits over a four-year period in Texas than in California colleges. In part, the greater percentage of credit obtaining students could be related to the higher unemployment rates found in Texas communities as well as the higher tuition charged by the Texas community colleges. It is probable that a combination of these factors influenced students to pursue their postsecondary education on a full-time basis which results in a greater percentage of credit obtainers. This assumption appears to be consistent with the findings from the credit rate regression analysis. Conversely, the lack of a significant difference between transfer rates of the two states was surprising. Because articulation and transfer agreements between two- and four-year colleges are formalized in Texas and not California, it was believed that significantly higher student transfer rates would be found in the Texas community colleges. This was not observed. Most likely, the low income and high unemployment in Texas may be having a negative effect on keeping students in the transfer pipeline. Furthermore, conditions such as higher senior institution tuition, greater emphasis on vocational than liberal arts programs, and so forth, that were not included in the regression analysis but are believed to have a negative effect on student transfer rates, could be considered as reasons why the transfer rates of Texas community colleges are similar to those of the California colleges.

## Discussion

### The Effects of the External Environment

The regressions results suggested that the external conditions affecting the transfer process in the colleges were different for student credit attainment and transfer. Unemployment was the single most important external factor explaining institutional student credit attainment ($R^2 = .17$, Table 2), while income and formalized mandates explained the variation in transfer rates ($R^2 = .19$, Table 3).

In an earlier study of 15 California community colleges, Alkin and Hendrix (1967) found higher transfer rates to be associated with such community variables as higher incomes, fewer lower level occupations, and more populated districts. McIntyre, also, (1987) discovered income was significantly and positively associated with transfer rates while unemployment was not; at the same time, McIntyre found that unemployment appeared to encourage high school graduates to enroll in a community college before enrolling in a senior college. McIntyre (1987) speculated that,

> . . . tightening labor markets cause students to extend their education, transfer, and pursue a bachelor's degree . . . . Moreover, transfer rates are not generally affected by unemployment rates, . . . suggesting that in periods of rising unemployment more [students] transfer because more select that option following high school graduation. (p. 156)

Conversely, Pincus and Archer (1989) argued that while real income has stopped growing, unemployment has increased, and in this context, students, especially those from lower socioeconomic backgrounds "are more likely to make short-term, pragmatic educational decisions leading to immediate employment rather than longer term decisions leading to career development" (p. 21). Similarly, Grubb (1990) speculated that unemployment might decrease transfer by reducing the financial resources available from employment. In this study, the zero-order correlations between unemployment and other conditions show that unemployment is positively and moderately correlated with credit rates ($r$ = .416, Table 1) and full-time students ($r$ = .271, Table 1) while negatively correlated with enrollment ($r$ = -.320, Table 1). Thus, it appears that while unemployment is not helping to increase enrollments, it may influence students to attend full-time, and subsequently to accumulate more credits, which is consistent with McIntyre's (1987) position.

Because income is positively related to enrollments ($r$ = .347, Table 1) and transfer ($r$ = .340, Table 1) and negatively related to full-time students ($r$ = -.341, Table 1), it may be that the majority of students enrolled full-time are matriculated in vocational programs that are not necessarily connected to the college's transfer function. That is, the vocational education programs may contribute to the increase of full-time and possibly younger student enrollments in the community colleges. Generally these programs are "tracks" focused on delivering specific skill training curricula which do not incorporate liberal arts or transfer courses, however.

Although student characteristics and financial resources are important considerations in transfer, getting the students into a senior college involves more than these factors. Largely, these factors are centered on connections between two- and four-year colleges involving course articulation and transfer processes. And, from a statewide perspective the importance of articulation and transfer processes can be distinguished by their levels of formalization. As noted by Kintzer and Wattenbarger (1985), formalize articulation and transfer structures are characterized by a breadth of general education requirements, by policies as to when these courses could be offered, and by a full range of student services offered to facilitate student transfer from two- to four-year colleges. For the most part, states in this category have a core general education curriculum which has been agreed upon by two- and four-year colleges, and that is transferrable from the community colleges to senior institutions within a state. In this study, the final regression model for transfer rates suggested that formalized articulation is the second most important factor contributing to transfer ($R^2$ = .07, standardized coefficient = .29, Table 3). A review of the zero-order correlations in Table 1 showed more formalized articulation/transfer agreements are in

states with high unemployment and low income. However, the comparison of the means for transfer rates and other factors between Texas (formalized-policy state) and California (voluntary-agreement state) colleges revealed that student transfer in Texas was not significantly higher than that in California (Table 4). As explained earlier, the economic conditions, curricular emphases, and high senior college tuition may be impacting the effects of formalized articulation/transfer agreements in certain states.

The Effects of Institutional Resources and Expenditures

Institutional resources and expenditures associated with credit rates were high tuition and greater full-time faculty, while low FTE expenditures and greater full-time faculty were related to transfer (Tables 2 & 3).

The close associations between tuition and credit attainment ($r$ = .310, Table 1) and between tuition and full-time students ($r$ = .363, Table 1) suggested that higher tuition increases the likelihood that students will stay in school and will be full-time (Table 1). Gilmore's (1990) study of liberal arts colleges showed tuition was found to be positively and significantly related to student outcomes such as retention and degree completion. Gilmore (1990) conjectured that higher prices may strengthen a student's psychological commitment to graduation. Traditionally, tuition in public community colleges has been low when compared with public senior institutions. Table 4 reveals that the mean tuition for the colleges in the sample was 500 dollars ($SD$ = 373) while tuition for the California community colleges was 100 dollars ($SD$ = 0). Also, it should be noted that the average unemployment for the nationwide sample was about 2.6% higher than the California colleges, while the percentages of younger students in both samples was almost equal. Given these comparisons between the nationwide and California samples, it appears that Gilmore's inference may have credence; nevertheless, more studies need to be executed to test this hypothesis.

According to the regression equations analyses, the presence of full-time faculty appeared to have positive contributions to credit and transfer rates ($R^2$s = .07 and .04, respectively, Tables 2 & 3). Higher percentages of full-time faculty were, nevertheless, more closely associated with greater percentages of younger and full-time students ($r$ = .417 and $r$ = .453, respectively, Table 1) than with credit and transfer rates. This finding suggests that the greater percentages of full-time faculty indirectly affect credit and transfer rates by having a direct impact on the number of full-time students. Given the paucity of community college studies on the effects of full-time faculty on student outcomes, it can only be hypothesized that higher percentages of faculty teaching on a continuing basis afford students greater opportunities to connect with their instructors and to discuss issues related to academics and goal attainment.

The negative relationship between college expenditures and transfer rates ($r$ = -.270, Table 1) suggested that colleges with the greatest expenditures per student have fewer transfer students. Further, colleges with higher expenditures have smaller enrollments ($r$ = -.259, Table 1). As found by Dickmeyer and Cirino (1986), large public community colleges spend about 10% less per student than small public institutions; yet, enrollments are not significantly correlated with transfer rates ($r$ = .054, Table 1). Although there is no direct evidence to explain why college expenses are lower in institutions transferring greater percentages of students, the answer may, in part, be owing to the type of curriculum offered. That is, colleges with a variety of liberal arts courses and conveniently scheduled classes would be attractive to the academically inclined student and the student who was serious about transfer. Supporting this assumption, Holland (1985) theorized that, people usually seek out those environments that permit them to use their skills, express their attitudes and values, and develop their talents. Thus, it is speculated that community colleges offering more liberal arts courses and programs have greater numbers of students moving in the transfer pipeline.

Furthermore, it appears that the expenses associated with a liberal arts curriculum are less than those of a vocational programs. In an expenditure study of eight Illinois community colleges, Warren, Anderson, and Hardin (1976) found occupational curricula cost is more per student than transfer curricula. And, in a cost distribution study of two California community colleges (comparing costs per student by department), Kominski (1987) demonstrated 80% of the most expensive departments were vocational and remedial. If community colleges with lower transfer rates emphasize more vocational and basic skills curricula than those colleges with higher transfer rates, then it is understandable that low transfer colleges would have a higher FTE expenditure per student. While the present evidence suggests interassociations between expenses, curriculum, and student transfer, more research is needed to examine these relationships.

## Conclusions

The final regression models in this study suggested that environmental conditions affecting the institutional student-transfer activity of nationwide community colleges could be viewed as follows. First, 50% of the variation in student credit rates among colleges was attributed to the direct effects of local unemployment and younger and full-time students. The effects of college tuition and full-time faculty appeared to be indirectly associated with student credit attainment and directly associated with younger and full-time students. Second, 42% of the variation in student transfer rates could be accounted for by high community income, formalized articulation/transfer mandates, low student

expenditures, and younger students. As with credit attainment, full-time faculty appeared to an indirect influence on transfer rates while directly affecting younger students. Further, the comparison of colleges, representing formalized and voluntary articulation/transfer agreement states, revealed that the significant difference between the states' student credit rates was most likely attributed to dissimilarities in economic conditions. In contrast, economic conditions and possibly unmeasured factors such as curriculum emphasis and high tuition at senior colleges appeared to be explanations for the lack of difference occurring between the states' student transfer rates.

Overall, the findings and discussions offered in this paper imply that environmental factors alone cannot fully account for institutional student-transfer activity. Pincus and Archer (1989) argue that environment- and student-centered explanations of transfer rates, especially low ones, ". . . constitute a blame-the-victim approach to explaining why relatively few community college students transfer to four-year schools" (p. 17). Among other possible explanations they target the college's organizational context--its actors, practices, and activities as being major influences on moving students along the transfer pipeline. However, the Pincus/Archer position requires validation since few studies (Banks, 1992; Turner, 1987, 1991) have attempted to assess institutional student-transfer activity by both the organization context and environmental conditions. The conclusions of this study and the scarcity of research linking the organizational context with student transfer call for more research on the influence of the college on its environment and its student outcomes. In particular, one question that needs to be explored is: Do effective transfer colleges create their environments or are they advantaged by their community demographics? Specifically, are conditions relating to higher institutional transfer rates such as younger, full-time students, and so forth, a reflection of events external to the college, or are they a result of the effectiveness of the organizational context? The challenge remains in answering these questions and others that will help to clarify the interplay between environmental conditions and organizational contexts. Answers to these questions will be of benefit to policy and decision makers when assessing community college student-transfer activity at state and local levels.

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Table 1. Correlation Matrix for Variables in Regression Models Using Credit and Transfer Rates as Dependent Variables.

| | CE | TC | Enrol | White | Age | FTS | FTF | FADV | Pubsi | Prisi | Unemp | Inc | Tuit | FTE | Mand |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CE | 1.000 | | | | | | | | | | | | | | |
| TC | .242* | 1.000 | | | | | | | | | | | | | |
| Enrol | -.236* | .054 | 1.000 | | | | | | | | | | | | |
| White | -.220 | .307** | -.154 | 1.000 | | | | | | | | | | | |
| Age | .456*** | .476*** | .023 | .105 | 1.000 | | | | | | | | | | |
| FTS | .609*** | .147 | -.423*** | -.218 | .530*** | 1.000 | | | | | | | | | |
| FTF | .327*** | .280* | -.261* | -.091 | .417*** | .453*** | 1.000 | | | | | | | | |
| FADV | .196 | .034 | -.346** | -.139 | .093 | .347** | .218 | 1.000 | | | | | | | |
| Pubsi | -.020 | .004 | .562*** | -.388*** | .132 | -.009 | -.189 | -.146 | 1.000 | | | | | | |
| Prisi | -.089 | -.114 | .522*** | -.368*** | -.111 | -.148 | -.236* | -.149 | .585*** | 1.000 | | | | | |
| Unemp | .416*** | .024 | -.320** | -.222* | -.025 | .271* | .245* | .178 | -.073 | -.339** | 1.000 | | | | |
| Inc | -.242* | .340** | .347** | .311** | .124 | -.341** | -.007 | -.229* | .224* | .255* | -.328** | 1.000 | | | |
| Tuit | .310** | -.034 | -.081 | -.134 | .145 | .363** | -.068 | .254* | .308* | .344** | .121 | -.124 | 1.000 | | |
| FTE | -.002 | -.270* | -.259* | -.366** | -.316** | -.001 | .094 | .284* | -.070 | .054 | .087 | -.113 | -.055 | 1.000 | |
| Mand | .195 | .143 | -.205 | -.148 | .038 | .086 | .174 | .409*** | -.106 | -.107 | .323** | -.219* | .211 | .259* | 1.000 |

Codes: CE: credit rates by %; TC: transfer rates by %; Enrol: institutional student credit enrollments; White: % white students; Age: % 17 - 24 year olds; FTS: % full-time students; FTF: % full-time faculty; FADV: faculty advising coded as yes or no; Pubsi: number of public senior institutions within a thirty mile radius; Prisi: number of private senior institutions within a thirty mile radius, Unemp: city or county unemployment; Inc: average median income of six census tracts around the college; Tuit: college tuition; FTE: instructional expenses including salary, learning resources and operational expenses; Mand: state mandates for articulation and transfer using Kintzer's (1989) categories of formal and informal policies. * p<.05; ** p<.01; *** p<.001.

Table 2. Standardized Regression Coefficients of Credit Rate Models. (N=76)

| Entry | Variables | $R^2$ | Beta After Step 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| External Condition Variables | | | | | | | |
| 1 | unemployment | .17 | .42 | .38 | .32 | .38 | .32 |
| Institutional Resources Variables | | | | | | | |
| 2 | tuition | .24 | | .26 | .29 | .21 | (.11) |
| 3 | full-time faculty | .31 | | | .27 | (.08) | (-.02) |
| Institutional Student Enrollment Variables | | | | | | | |
| 4 | younger students | .43 | | | | .40 | .27 |
| 5 | full-time students | .50 | | | | | .35 |
| Parameters of Final Model | | | | | | | |
| $R^2$ | .50 | | | | | | |
| S.E.E. | 11.83 | | | | | | |

Variables not entering the equations: income, proximity of senior institutions, statewide mandates, FTE expenditures, faculty advising, enrollments, and white students. Code: ( ) = not significant.

Table 3. Standardized Regression Coefficients of Transfer Rate Models. (N=74)

| Entry | Variables | $R^2$ | Beta After Step 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| External Condition Variables | | | | | | | | |
| 1 | income | .12 | .34 | .40 | .46 | .43 | .41 | .38 |
| 2 | formalize mandates | .19 | | .28 | .27 | .34 | .30 | .29 |
| 3 | private senior colleges | .24 | | | -.23 | (-.19) | (-.13) | (-.13) |
| Institutional Resource and Expenditure Variables | | | | | | | | |
| 4 | FTE expenditures | .33 | | | | -.31 | -.33 | -.23 |
| 5 | full-time faculty | .37 | | | | | .23 | (.10) |
| Institutional Student Enrollment Variables | | | | | | | | |
| 6 | younger students | .42 | | | | | | .26 |
| Parameters of Final Model | | | | | | | | |
| $R^2$ | .42 | | | | | | | |
| S.E.E. | 6.42 | | | | | | | |

Variables not entering the equations: unemployment, proximity of public senior colleges, tuition, faculty advising, enrollments, white students, and full-time students. Code: ( ) = not significant.

Table 4. Means and Standard Deviations for Institutional Outcomes and Environmental Conditions for the Total Sample, California and Texas Colleges.

| Samples | CE | TC | Enrol | White | Age | FTS | FTF | FADV | Pubsi | Prisi | Unemp | Inc | Tuit | FTE | Mand |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Sample (N=78) | | | | | | | | | | | | | | | |
| means | 49.65 | 22.96 | 4.67 | 54.04 | 45.54 | 36.76 | 44.44 | 1.56 | 3.23 | 9.22 | 8.20 | 4.18 | 500.24 | 53.92 | 3.06 |
| stdev | 16.49 | 9.64 | 2.13 | 24.90 | 10.73 | 14.45 | 13.85 | .50 | 2.75 | 10.11 | 3.27 | 2.03 | 372.29 | 14.57 | .90 |
| California Colleges (N=17) | | | | | | | | | | | | | | | |
| means | 38.00** | 21.94 | 6.41 | 54.94 | 44.53 | 26.29* | 43.29 | 1.00 | 3.41 | 8.82 | 5.62*** | 5.64* | 100.00** | 49.53 | 2.00 |
| stdev | 10.36 | 7.32 | 1.84 | 16.44 | 8.78 | 4.44 | 12.27 | 00 | 1.94 | 8.13 | 1.74 | 2.12 | 00 | 14.56 | 00 |
| Texas Colleges (N=16) | | | | | | | | | | | | | | | |
| means | 53.88** | 23.69 | 4.56 | 53.88 | 48.94 | 35.06* | 48.06 | 1.69 | 2.25 | 2.06 | 10.94*** | 3.56* | 295.13** | 54.13 | 4.00 |
| stdev | 12.83 | 9.19 | 2.28 | 21.91 | 10.72 | 14.13 | 15.97 | .48 | 2.18 | 2.54 | 3.29 | 1.55 | 113.24 | 12.44 | 00 |

Codes: CE: credit rates by %; TC: transfer rates by %; Enrol: institutional student credit enrollments; White: % white students; Age: % 17 - 24 year olds; FTS: % full-time students; FTF: % full-time faculty; FADV: faculty advising coded as yes or no; Pubsi: number of public senior institutions within a thirty mile radius; Prisi: number of private senior institutions within a thirty mile radius, Unemp: city or county unemployment; Inc: average median income of six census tracts around the college; Tuit: college tuition; FTE: instructional expenses including salary, learning resources and operational expenses; Mand: state mandates for articulation and transfer using Kintzer's (1989) categories of formal and informal policies.
Significance levels for comparisons between California and Texas colleges: * p<.05; ** p<.01; *** p<.001.





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